# CENTRE FOR HEALTHCARE INNOVATION

#### CHI Learning & Development System (CHILD)

#### **Project Title**

To improve Parental Involvement & Neurodevelopment Care for Premature Infants in the Neonatal ICU

#### **Project Lead and Members**

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- Tay YY
- Delphine Seto
- Robyn Foo
- B. Ismail
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#### Organisation(s) Involved

Singapore General Hospital

#### **Healthcare Family Group Involved in this Project**

Medical, Allied Health

#### **Specialty or Discipline**

Neonatology & Developmental Medicine, Physiotherapy

#### **Aims**

To increase parental involvement and implement timely developmental care intervention from 40% to 100% in premature infants born ≤32 weeks over 12 months in SGH.

- Reduction in length of stay
- Days to regain birth weight
- Days to achieve full feeds



#### CHI Learning & Development System (CHILD)

• Test of Infant Motor Performance

#### Background

See poster appended / below

#### Methods

See poster appended / below

#### Results

See poster appended / below

#### **Lessons Learnt**

See poster appended / below

#### Conclusion

See poster appended / below

#### **Additional Information**

Singapore Healthcare Management (SHM) Conference 2021 – Shortlisted Project (Patient Experience Category)

#### **Project Category**

Care & Process Redesign, Quality Improvement, Workflow Redesign, Value Based Care, Length Of Stay, Safe Care

#### Keywords

Early Parental Education, Developmental Care Bundle, Kangaroo Care

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# Project H2K

To Improve Parental Involvement & Neurodevelopmental Care for Premature Infants in the Neonatal ICU

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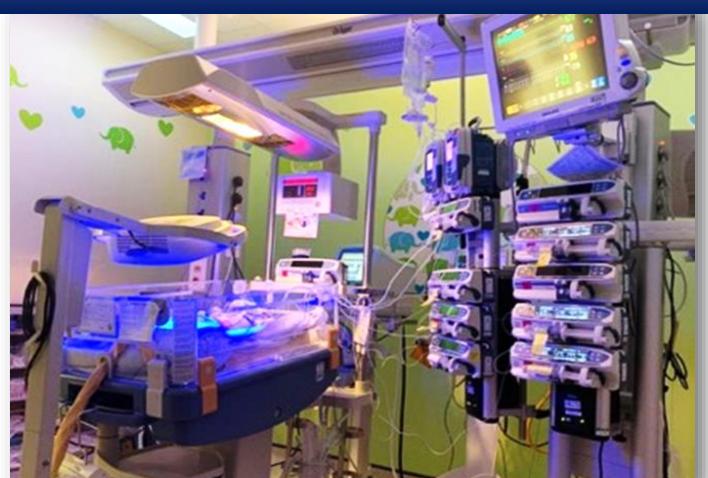
# **Background of the Problem**

### STRESSFUL ENVIRONMENT

Neonatal ICU can be stressful for both preterm infants and their parents. Medical intervention & environmental stressors eg: blood taking, bright light or loud noise may alter physiological function of the infants.

## **AFFECTING DEVELOPMENT**

Mismatches between extra- and intrauterine during the critical period of the developing brain may affect future developmental outcomes.



## **EARLY PARENTAL INVOLVEMENT**

Builds quality experiences in infant's NICU journey and improves neurodevelopmental outcomes.

# **Mission Statement**

Project Huddle to Kuddle (H2K) aims to increase parental involvement

and implement timely

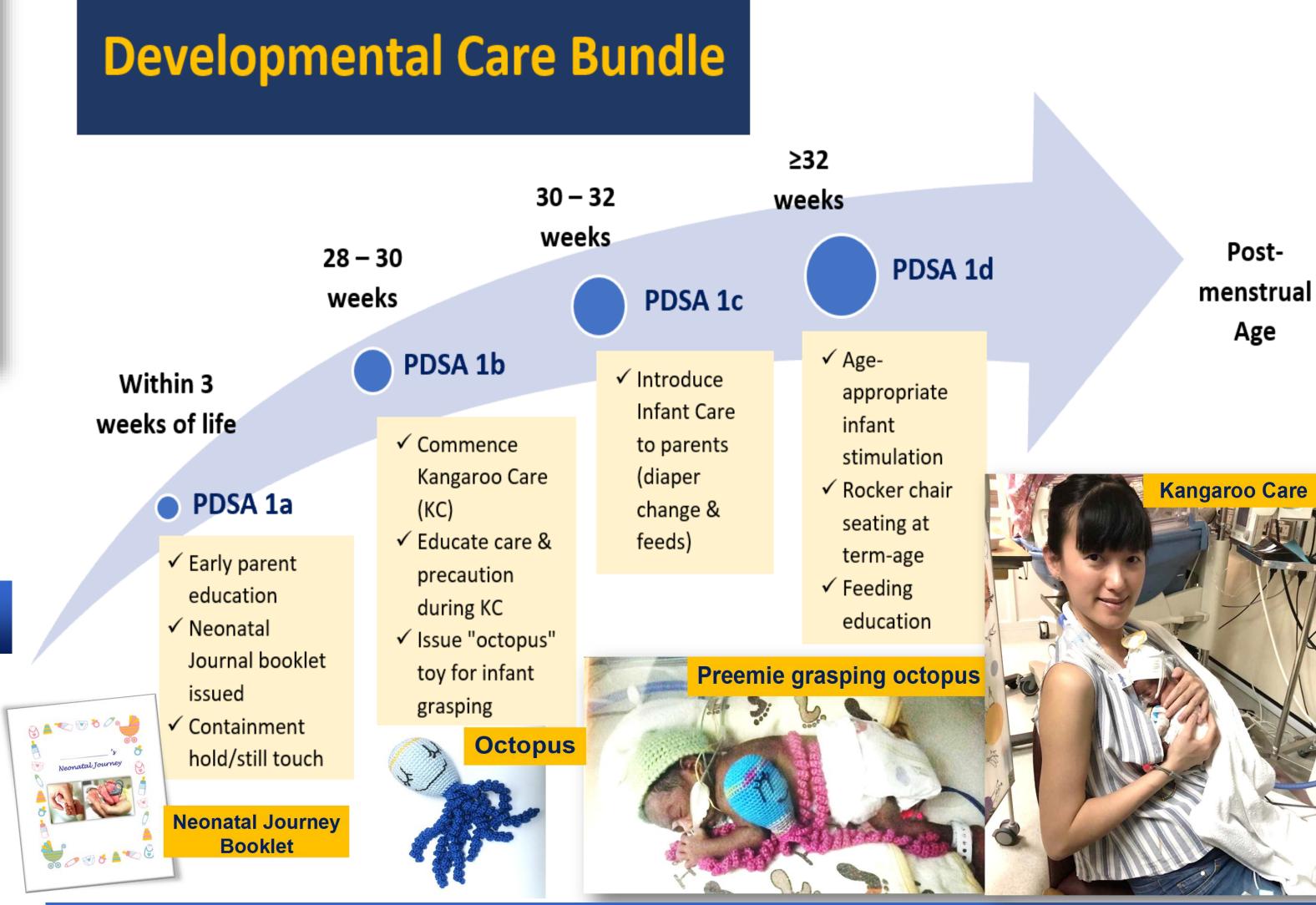
developmental care intervention

from 40% to 100% in premature infants born ≤32 weeks over 12 months in SGH.

# 2 Secondary Outcomes:

- Reduction in length of stay (LOS)
- Days to regain birth weight (BW)
- Days to achieve full feeds
- Test of Infant Motor Performance (TIMP)

# Intervention



# Results

# Increased Parental Level of Participation

Increased Likert scale from <40% to **80%** in all 7 parental involvement domains eg: diaper change & assist feeding (p < 0.005)

# **Improved Motor Status**

Increased mean TIMP scores by **2 points** [NS]

## **Timely Developmental Care**

Achieved in **100**% of the preterm infants born ≤32wks



# Improved days to Full Feeds & Regain BW

Mean days to achieve full feeds and regain BW improved by 4 days & 1 day respectively [NS]

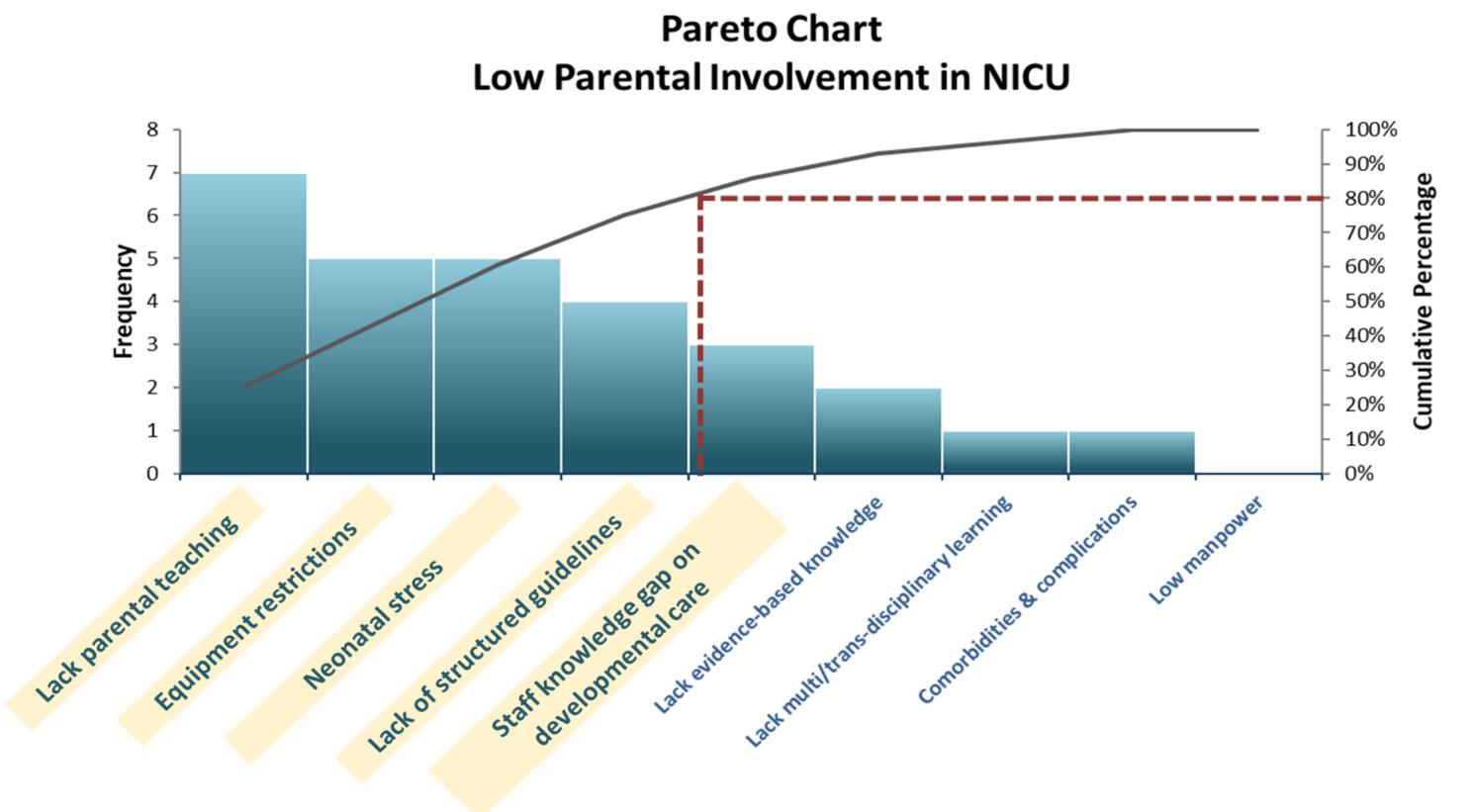
# Reduced Length of Stay

Reduced mean LOS in HD by 4 days [NS]

High-dependency LOS

\*HD – high dependency unit NS – Not Significant S – Significant

#### Methodology Process care knowledge No standard guidelines on developmental care No proper guidelines Low manpower Lack multi/trans-Different views among healthcare professionals disciplinary learning Lack awareness Staff occupied by clinical work Inconsistent timing to commence Junior staff Lack of Lack of experience Staff unsure of workflow developmental No guideline on age care knowledge No guidelines to refer appropriate handling education Fearful to handle infant excessively Nil parental guide Low parental Different views stress during on handling Lack evidence-based knowledge from staff parents' handling neonatal stress involvement of infant care in Perceived baby as Unsure of environment Unsure of infant behavioural cues NNICU Constant beeping alarms on medical devices Fluctuating physiological stability of infant Lack of developmental care No developmental care Neonatal stress knowledge educated Neonatal stress Stressful NICU surroundings Parental stress during care during handling Lack awareness on parental Lack opportunity Prematurity associated co-morbidity & complications involvement opportunity teaching surrounding on infant care Not family-centered Variable Infant physiological stability Parental handling takes longer time Physical restriction of bonding Lack knowledge on developmental care No parental No guidelines on education teaching Poor handling & positioning No timely parents education prongs restriction Parents unprepared Environment Patients/Parents Fig 1. Fish Bone Diagram of Causes



**Factors** 

## Fig 2. Pareto Chart of Low Parental Involvement in NICU

# Analysis

Brainstorming
sessions in
multidisciplinary
focus group



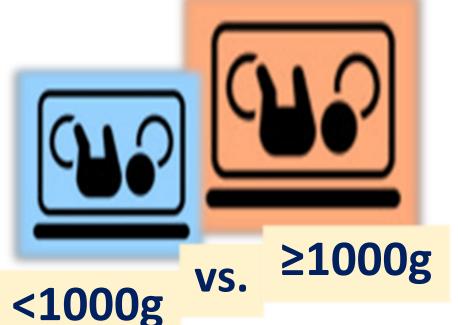
solutions

Create
Neurodevelopmental Bundle
(Reinforced Kangaroo Care,
age-appropriate to individual
infant based on
post-menstrual age)

# SUBGROUP ANALYSIS

# Baby with BW ≥1000g had:

Comparison of BW



Reduced HD Length of Stay
Significantly reduced
by 7 days (p < 0.05)

Regained BW earlier
Significantly earlier

by **3 days** (p < 0.05)

Achieved Full Feeds earlier

Significantly earlier by **7 days** (p = 0.069)

# Days to Regain Birth Weight 30 BW < 1000g BW > 1000g BW < 1000g BW > 1000g

# Sustainability

1 Monitor Consistent Parental Education & Involvement

Ensure e-documentation within 3 weeks of life of the infants

Installation of Procedures & Systems

# 3 Compliance in Infection Control

Ensure daily washing of octopus and wipeable rocker chair



Close monitoring of kangaroo care



Visible guideline forms on patient's clipboard

# Acknowledgement

We would like to thank the sponsors, Dr Poon Woei Bing (Head, Neonatology) and Jennifer Liaw Suet Ching (Head, Physiotherapy), for being supportive and encouraging of this project.